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10/576,416	11/29/2006	Kazumi Naito	Q78150	3434

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EXAMINER	
CRAWFORD, LATANYA N	
ART UNIT	PAPER NUMBER
2813	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,416	NAITO ET AL.	
	Examiner	Art Unit	
	LATANYA CRAWFORD	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04/19/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/05/2009,4/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the correspondence filed on 04/19/2006. Currently, claims 1-24 are pending.

Information Disclosure Statement

2. The IDS submitted on 06/05/2009 and 04/19/2006 has been considered. However reference Pub no. 2003133256 was not considered. Examiner believes an incorrect publication number was given.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown:

a) electrode (anode)

b) dielectric layer

c) other electrode (cathode)

or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. “The electrolytic solution not containing a semiconductor layer-forming precursor” does not further limit claim 1.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 1 recites the limitation "pores" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1,3,5, 8,10-14, 19, 21,22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamada (US Patent 6,088,218).

Regarding claim 1, Hamada et al. discloses a method for producing a capacitor comprising, as one electrode (anode), an electric conductor having pores and having formed on the surface thereof a dielectric layer (column 4, lines 46-52) and, as the other electrode (cathode), a semiconductor layer formed on the electric conductor by energization in an electrolytic solution, the method comprising impregnating pores with a semiconductor layer-forming precursor before energization to render the concentration of semiconductor layer-forming precursor in pores higher than that of semiconductor layer-forming precursor in the electrolytic solution (column 7,lines 60-67; column9, lines 55-67; column 10 lines 1-8 & 9-21).

Regarding claim 3, Hamada et al. discloses wherein the electric conductor is at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon or a mixture thereof (column 9, lines 55-56).

Regarding claim 5, Hamada et al. discloses wherein the electric conductor is a metal or alloy mainly comprising at least one member selected from tantalum, niobium and aluminum, or a niobium oxide (column 3, lines 55-60) .

Regarding claim 8, Hamada et al. discloses wherein the electric conductor has a size of 5 mm^3 or more (column 9, lines 55-60).

Regarding claim 10, Hamada et al. discloses wherein the dielectric layer mainly comprises at least one member selected from metal oxides such as Ta_2O_5, Al_2O_3, TiO_2 and Yb_2O_5 (column 9., lines 55-62).

Regarding claim 11, Hamada et al. discloses wherein the semiconductor layer-forming precursor is at least one member selected from an aniline derivative (raw material of polyaniline), a phenol derivative (raw material of polyoxyphenylene), a thiophenol derivative (raw material ofpolyphenylene sulfide), a thiophene derivative (raw material of polythiophene), a furan derivative (raw material of polyfuran) and a pyrrole derivative (raw material of polypyrrole or polymethylpyrrole) (column 5, lines 1-9).

Regarding claim 12, Hamada et al. discloses wherein the semiconductor layer-forming precursor is pyrrole or 3,4-ethylenedioxythiophene (column 5, lines 1-9).

Regarding claim 13, Hamada et al. discloses wherein the semiconductor layer-forming precursor is a compound which is oxidized or reduced by energization and becomes an inorganic semiconductor (column 5, lines 1-9).

Regarding claim 14, Hamada et al. discloses wherein the semiconductor layer is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer (column 4, lines 60-67) .

Regarding 19, Hamada et al. discloses semiconductor layer is at least one member selected from an organic semiconductor layer(column 4, lines 60-67). Examiner notes, since claim 14 states that the semiconductor layer is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer and Hamada et al teaches an organic semiconductor layer, the inorganic semiconductor layer is not considered.

Regarding claim 21, Hamada et al. discloses a capacitor produced by the production method claimed in claim 1 (abstract).

Regarding claim 22, Hamada et al. discloses wherein the impregnation ratio of the semiconductor is 90% or more (column 8, lines 58-61).

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 3-5, 8 & 10-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohata (US Patent 6,660,188 B1)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Ohata et al. discloses a method for producing a capacitor comprising, as one electrode (anode), an electric conductor having pores and having formed on the surface thereof a dielectric layer and, as the other electrode (cathode) (column 22, lines 9-18; column 21 lines 35-38), a semiconductor layer formed on the electric conductor by energization in an electrolytic solution, the method comprising impregnating pores with a semiconductor layer-forming precursor before energization to render the concentration of semiconductor layer-forming precursor in pores higher than that of semiconductor layer-forming precursor in the electrolytic solution (column 19, lines 3-11; column 21, lines 40-54).

Regarding claim 3, Ohata et al. discloses the electric conductor is at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon or a mixture thereof (column 17, lines 40-46).

Regarding claim 4, Ohata et al. discloses wherein the electric conductor is a laminated body having, as the surface layer, at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon, or a mixture thereof (column 21, lines 60-67).

Regarding claim 5, Ohata et al. discloses wherein the electric conductor is a metal or alloy mainly comprising at least one member selected from tantalum, niobium and aluminum, or a niobium oxide (column 17, lines 40-46).

Regarding claim 8, Ohata et al. discloses wherein the electric conductor has a size of 5 mm^3 or more (column 21, lines 29-31).

Regarding claim 10, Ohata et al. discloses wherein the dielectric layer mainly comprises at least one member selected from metal oxides such as Ta_2O_5, Al_2O_3, TiO_2 and Yb_2O_5 (column 21, lines 60-67).

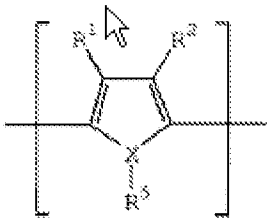
Regarding claim 11, Ohata et al. discloses wherein the semiconductor layer-forming precursor is at least one member selected from an aniline derivative (raw material of polyaniline), a phenol derivative (raw material of polyoxyphenylene), a thiophenol derivative (raw material ofpolyphenylene sulfide), a thiophene derivative (raw material of polythiophene), a furan derivative (raw material of polyfuran) and a pyrrole derivative (raw material ofpolypyrrole or polymethylpyrrole) (column 17, lines 25-34).

Regarding claim 12, Ohata et al. discloses wherein the semiconductor layer-forming precursor is pyrrole or 3,4-ethylenedioxythiophene (column 17, lines 5-15).

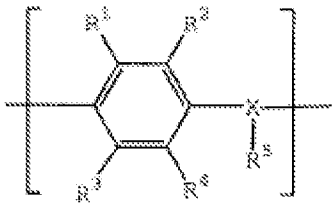
Regarding claim 13, Ohata et al. discloses wherein the semiconductor layer-forming precursor is a compound which is oxidized or reduced by energization and becomes an inorganic semiconductor (column 17, lines 47-65).

Regarding claim 14, Ohata et al. discloses wherein the semiconductor layer is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer (column 18, lines 52-54).

Regarding claim 15, Ohata et al. discloses wherein the organic semiconductor is at least one member selected from an organic semiconductor comprising benzopyrroline tetramer and chloranil, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyano-quinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula
(1) or (2):



(1)

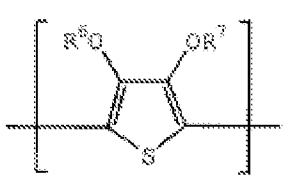


(2)

wherein R1 to R4 each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X

represents an oxygen atom, a sulfur atom or a nitrogen atom, R5 is present only when X is a nitrogen atom, and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R1 and R2, and R3 and R4 may combine with each other to form a cyclic structure (column 5, lines 8-43).

Regarding claim 16, Ohata et al. discloses wherein the electrically conducting polymer containing a repeating unit represented by formula (1) is an electrically conducting polymer containing a structure unit represented by the following formula (3) as a repeating unit:



(3)

wherein Ra and R7 each independently represents a hydrogen atom, a linear or branched, saturated or unsaturated alkyl group having from 1 to 6 carbon atoms, or a substituent for forming at least one 5-, 6- or 7-membered saturated hydrocarbon cyclic structure containing two oxygen atoms when the alkyl groups are combined with each other at an arbitrary position, and the cyclic structure includes a structure having a vinylene bond which may be substituted, and a phenylene structure which may be substituted(column 5, lines 8-43).

Regarding claim 17, Ohata et al. discloses wherein the electrically conducting polymer is selected from polyaniline, polyoxyphenylene, polyphenylene sulfide,

polythiophene, polyfuran, poly-pyrrole, polymethylpyrrole, and substitution derivatives and copolymers thereof (column 22, lines 1-8) .

Regarding claim 18, Ohata et al. discloses wherein the electrically conducting polymer is poly(3,4-ethylenedioxythiophene) (column 22, lines 1-8)

Regarding claim 19, Ohata et al. discloses semiconductor layer is at least one member selected from an organic semiconductor layer(column 18, lines 52-54). Examiner notes, since claim 14 states that the semiconductor layer is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer and Ohata et al teaches an organic semiconductor layer, the inorganic semiconductor layer is not considered.

Regarding claim 20, Ohata et al. discloses wherein the electrical conductivity of the semiconductor is from 10^{-2} to 10^{3} S/cm (column 20, lines 25-34).

Regarding claim 21, Ohata et al. discloses a capacitor produced by the production method claimed in claim 1 (Abstract).

Regarding claim 23, Ohata et al. discloses an electronic circuit using the capacitor claimed in claim 21 (column 1, lines 43-47).

Regarding claim 24, Ohata et al. discloses an electronic device using the capacitor claimed in claim 21 (column 1, lines 43-47).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 2, 4,6, 7, & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US Patent 6,088,218) in view of Kojima (US Pub no. 2003/0007318 A1).

Regarding claim 2, Hamada et al. discloses all the claim limitations of claim 1 but fails to teach wherein the electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor.

However, Kojima et al. teaches wherein the electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor [0005]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hamada et al. with electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor since doing so would realize lower ESR.

Regarding claim 4, Kojima et al. discloses wherein the electric conductor is a laminated body having, as the surface layer, at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon, or a mixture thereof [0025].

Regarding claim 6, Hamada et al. discloses all the claim limitations of claim 1 and further teaches the electric conductor is tantalum but fails to teach having a CV value of 100,000 μF·V/g or more.

However, Kojima et al. teaches having a CV value of 100,000 μF·V/g or more (TABLE 1[0066]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hamada et al. with tantalum having a CV value of 100,000 μF·V/g or more as taught by Kojima et al. since doing so would minimize leakage current.

Regarding claim 7, (Hamada in view of Kojima et al.)Kojima et al. discloses wherein the electric conductor is niobium having a CV value of 150,000 μF·V/g or more (TABLE 1[0066]). A prima facie case of obviousness exists for the same reasoning in claim 6.

Regarding claim 23 & claim 24, (Hamada et al. in view of Kojima) Hamada et al. teaches the capacitor. Kojima et al. discloses an electronic circuit using the capacitor; an electronic device using the capacitor. A prima facie case of obviousness exists for the same reasoning in claim 6.

14. Claims 2, 6 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (US Patent 6,660,188 B1) in view of Kojima (US Pub no. 2003/0007318 A1).

Regarding claim 2, Ohata et al. discloses all the claim limitations of claim 1 but fails to teach wherein the electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor.

However, Kojima et al. teaches wherein the electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor [0005]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Ohata et al. with electrolytic solution is an electrolytic solution not containing a semiconductor layer-forming precursor since doing so would realize lower ESR.

Regarding claim 6, Ohata et al. discloses all the claim limitations of claim 1 and further teaches the electric conductor is tantalum but fails to teach having a CV value of 100,000 μF·V/g or more.

However, Kojima et al. teaches having a CV value of 100,000 μF·V/g or more (TABLE 1[0066]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Ohata et al. with tantalum having a CV value of 100,000 μF·V/g or more as taught by Kojima et al. since doing so would minimize leakage current.

Regarding claim 7, (Ohata in view of Kojima et al.)Kojima et al. discloses wherein the electric conductor is niobium having a CV value of 150,000 μF·V/g or more (TABLE 1[0066]). A prima facie case of obviousness exists for the same reasoning in claim 6.

15. Claims 9 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (US Patent 6,660,188 B1)

Regarding claim 9, Ohata et al. teaches when the electric conductor has a foil shape and the depth of the pore formed by etching (column 17, lines 40-46) except for 200 μm or more. A prima facie case of obviousness exists without showing that the

claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff 16 USPQ2d 1935, 1937 (Fed. Cir.1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Vir. 1996) (claimed ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the result of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA)(discovery of optimum value of result effective variable in known process is ordinarily within the skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious). One of ordinary skill in the art at the time the invention was made would recognize that it would have been obvious to optimize variables to achieve desired electrical contact.

Regarding claim 22, Ohata et al. discloses impregnation of semiconductor having supersaturated conditions (column 19, lines 3-11) (Examiner notes that an impregnation ratio exists by way of the impregnation process except for an impregnation ratio of the semiconductor is 90% or more. A prima facie case of obviousness exists without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff 16 USPQ2d 1935, 1937 (Fed. Cir.1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Vir. 1996) (claimed ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the result of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA)(discovery of optimum value of result effective variable in known process is ordinarily within the skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious). One of ordinary skill in

the art at the time the invention was made would recognize that it would have been obvious to optimize variables to achieve desired electrical contact.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US Patent 6,088,218) in view of Yoshida (US Pub no. 2003/0133256 A1).

Regarding claim 9, Hamada et al discloses all the claim limitations of claim 1 but fails to teach wherein the electric conductor has a foil shape and the depth of pore formed by etching is 200 μm or more.

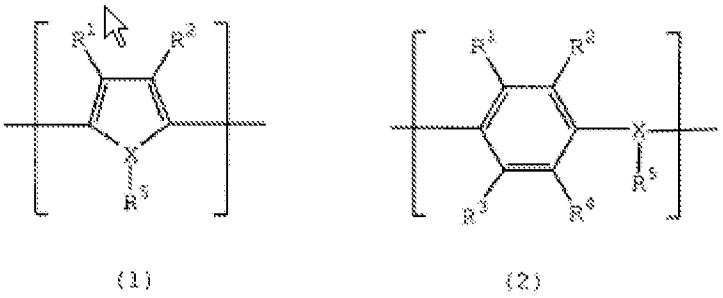
However, Yoshida et al. discloses wherein the electric conductor has a foil shape and the depth of pore formed by etching is 200 μm or more [0035-0036] [0042]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hamada et al. with the electric conductor has a foil shape and the depth of pore formed by etching is 200 μm or more as taught by Yoshida et al. since doing so increases the capacitance of the device.

17. Claims 15-18 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US Patent 6,088,218) in view of Omori (US Patent 6,934,146 B2).

Regarding claim 15, Hamada et al. discloses all the limitations of claim 14 but fails to teach at least one member selected from an organic semiconductor comprising benzopyrroline tetramer and chloranil, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyano-quinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating

unit represented by the following formula

(1) or (2):

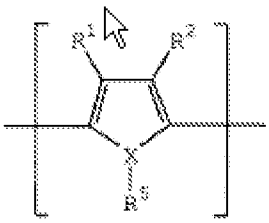


(1) (2)

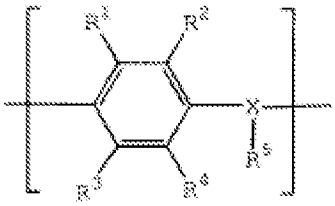
wherein R1 to R4 each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X represents an oxygen atom, a sulfur atom or a nitrogen atom, R5 is present only when X is a nitrogen atom, and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R1 and R2, and R3 and R4 may combine with each other to form a cyclic structure.

However, Omori et al. discloses at least one member selected from an organic semiconductor comprising benzopyrroline tetramer and chloranil, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyano-quinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula

(1) or (2):



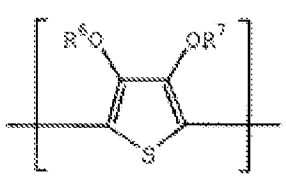
(1)



(2)

wherein R1 to R4 each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X represents an oxygen atom, a sulfur atom or a nitrogen atom, R5 is present only when X is a nitrogen atom, and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R1 and R2, and R3 and R4 may combine with each other to form a cyclic structure (column 14, lines 65-67; column 15, lines 1-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hamada et al. with that of Omori et al. since the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art. "KSR at 1395 (citing *United States v. Adams*, 383 US 39, 50-51 (1966)).

Regarding claim 16, (Hamada et al. in view of Omari et al.) Omari et al. discloses wherein the electrically conducting polymer containing a repeating unit represented by formula (1) is an electrically conducting polymer containing a structure unit represented by the following formula (3) as a repeating unit:



(3)

wherein Ra and R7 each independently represents a hydrogen atom, a linear or branched, saturated or unsaturated alkyl group having from 1 to 6 carbon atoms, or a substituent for forming at least one 5-, 6- or 7-membered saturated hydrocarbon cyclic structure containing two oxygen atoms when the alkyl groups are combined with each other at an arbitrary position, and the cyclic structure includes a structure having a vinylene bond which may be substituted, and a phenylene structure which may be substituted(column 14, lines 65-67; column 15, lines 1-64). A prima facie case of obviousness exists for the same reasoning in claim 15.

Regarding claim 17, (Hamada et al. in view of Omari et al.) Omari et al. discloses wherein the electrically conducting polymer is selected from polyaniline, polyoxyphenylene, polyphenylene sulfide, polythiophene, polyfuran, poly-pyrrole, polymethylpyrrole, and substitution derivatives and copolymers thereof. (column 16, lines 46-57). A prima facie case of obviousness exists for the same reasoning in claim 15.

Regarding claim 18, (Hamada et al. in view of Omari et al.) Omari et al. discloses wherein the electrically conducting polymer is poly(3,4-ethylenedioxythiophene) (column 23, lines 65-67). A prima facie case of obviousness exists for the same reasoning in claim 15.

Regarding claim 20, (Hamada et al. in view of Omari et al.) Omari et al. discloses wherein the electrical conductivity of the semiconductor is from 10^{-2} to 10^{3} S/cm (column 16, lines 46-57). A prima facie case of obviousness exists for the same reasoning in claim 15.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LATANYA CRAWFORD whose telephone number is (571)270-3208. The examiner can normally be reached on Monday-Friday 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Landau can be reached on (571)-272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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